

FORM PTO-1390
(REV. 11-2000)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER
21413-PCT-PA

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371**

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

10/030745

INTERNATIONAL APPLICATION NO.
PCT/BE00/00064

INTERNATIONAL FILING DATE
16 June 2000 (16.06.2000)

PRIORITY DATE CLAIMED
17 June 1999 (17.06/1999)

TITLE OF INVENTION DEVICE FOR AUTOMATICALLY PICKING UP OBJECTS

APPLICANT(S) FOR DO/EO/US

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371 (f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. ☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☒ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)).
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☒ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
14. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
15. ☐ A substitute specification.
16. ☒ A change of power of attorney and/or address letter.
17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. ☒ Other items or information:
 - (a) copy of International Search Report 16 October 2000
 - (b) copy of FIGS. 1-5

U.S. APPLICATION NO (if known, see 37 CFR 1.5)

INTERNATIONAL APPLICATION NO
PCT/BE00/00064ATTORNEY'S DOCKET NUMBER
21413-PCT-PA21. ☒ The following fees are submitted:**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :**

Neither international preliminary examination fee (37 CFR 1.482)
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO
and International Search Report not prepared by the EPO or JPO \$1,000.00

International preliminary examination fee (37 CFR 1.482) not paid to
USPTO but International Search Report prepared by the EPO or JPO \$860.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO
but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$710.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO
but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$690.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO
and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$860.00

Surcharge of **\$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492 (e)).

\$0.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$
Total claims	0 - 20 =	0	x \$18.00	\$0.00
Independent claims	0 - 3 =	0	x \$80.00	\$0.00

MULTIPLE DEPENDENT CLAIM(S) (if applicable) + \$270.00 \$0.00

TOTAL OF ABOVE CALCULATIONS =

\$860.00

☒ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above
are reduced by 1/2.

\$430.00

SUBTOTAL =

\$430.00

Processing fee of **\$130.00** for furnishing the English translation later than ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(f)).

\$0.00

TOTAL NATIONAL FEE =

\$430.00

Fee for recording the enclosed assignment (37 CFR 1.21 (h)). The assignment must be
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +

\$0.00

TOTAL FEES ENCLOSED =

\$430.00

Amount to be
refunded: \$

charged: \$

- a. ☒ A check in the amount of \$430.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any
overpayment to Deposit Account No. 02-2839. A duplicate copy of this sheet is enclosed.
- d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card
information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

**NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR
1.137 (a) or (b)) must be filed and granted to restore the application to pending status.**

SEND ALL CORRESPONDENCE TO:
LEONARD BLOOM & ASSOCIATES, LLC
Intellectual Property Law Offices
502 Washington Avenue, Suite 220
Towson, MD 21204

Signature

Robert M. Gamson

Name

32,986

Registration No.

10/030745

531 Rec'd FGT/... 14 DEC 2001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#3/a

Applicant: Colens

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Serial No. (to be assigned)

*

Art Unit: (to be assigned)

Filed: (concurrently herewith)

*

Examiner: (to be assigned)

For: DEVICE FOR AUTOMATICALLY
PICKING UP OBJECTS

*

*

PRELIMINARY AMENDMENT

To the Honorable Commissioner
of Patents and Trademarks
P.O. Box 2327
Arlington, VA 22202

Dear Sir:

Prior to examination on the merits, kindly cancel claims 1-17 and insert herein claims 18-

35 as follows:

FOR FGT - 3440001

18. A system for picking up objects over a delimited surface, which consists of an automatic mobile machine provided with an onboard computer, at least one motor associated with a power source, a mechanical device for gripping and storing objects in a container supported by the mobile machine, a device for emptying said container, a device for limiting the pick up surface and at least one station in which the picked up objects may be unloaded.

19. A system as claimed in claim 18, wherein the power source is a rechargeable battery and wherein there is provided at least one station for recharging rechargeable batteries.

20. A system as claimed in claim 19, wherein the battery recharging and the object unloading stations are coupled.

21. A system as claimed in claim 18, wherein the objects are golf balls.

22. A system as claimed in claim 18, wherein the surface limiting device consists of a wire extending at the periphery of said surface and being detectable by a detector carried by the machine.

23. A system as claimed in claim 22, wherein the machine reaches the at least one station by following the surface limiting wire, the at least one station being situated along said wire or on an extension thereof.

24. A system as claimed in claim 19, wherein the recharging station consists of at least one fixed rail which is situated along said wire and is adapted to come in contact with one of two side brushes carried by the mobile machine.

25. A system as claimed in claim 19, characterized in that the at least one recharging station is situated in the proximity of persons using the system.

26. A system as claimed in claim 18, wherein the at least one station comprises a ball recovery bowl, equipped with a ball lifting system, and connected to a duct which is adapted to convey balls at least partly by gravity.

27. A system as claimed in claim 18, wherein the automatic machine proceeds over the delimited pick up surface at least partly in a random manner.

28. A system as claimed in claim 18, wherein the mechanical gripping system consists of a rotary brush having spikes arranged radially around a shaft of said brush, said spikes being adapted to pierce the objects situated on said surface, and said objects being dragged along into a circular movement, released from the spikes by fixed elements which are engaged between the spikes, and direct the objects toward a storage device.

29. A system as claimed in claim 18, wherein the picked up objects are dead leaves.

30. A system as claimed in claim 18, wherein the picked up objects are paper sheets.

31. A system as claimed in claim 18, wherein there is also included on the mobile machine an automatic system for mowing a grass surface.

32. An automatic pick up machine adapted to the system as claimed in claim 18.

33. A machine as claimed in claim 32, characterized in that it includes deflector arms which are adapted to direct the objects to be picked up toward the gripping device, as the machine proceeds.

34. A method of picking up objects over a predetermined surface, by using the system of claim 18.

35. A method of picking up objects over a predetermined surface, by using the machine as claimed in claim 18.

REMARKS

Claims 1-17 as originally filed have been cancelled herein.

New claims 18-35 have been inserted.

Respectfully submitted,

Dec 14, 2001

Date

Robert M. Gamson

Robert M. Gamson

Reg. No. 32,986

Attorney for Applicant

CERTIFICATE OF TRANSMITTAL

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail in an envelope addressed to: Commissioner of Patents and Trademarks, P.O. Box 2327, Arlington, VA 22202.

Date: December 14, 2001

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By: Sawyer (N. Bates)

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S/PRTS

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531 Rec'd PC/77 14 DEC 2001

Device for automatically picking up objects.

Most golf clubs have a practice green, i.e. a lawn surface designed for the training of golf players.

Golfers practice their "drives" from a reserved space and hit balls to distances which are typically of
5 50 to 200 meters. These balls have to be regularly picked up and returned to the driving site.

Special golf ball pick up machines, particularly operating on practice greens are already known. They generally operate with a system which comprises spaced
10 flexible disks having the width of a golf ball (see for instance US patent 5,711,388). The disks rotate and are vertically fitted on a horizontal shaft, perpendicular to the forward movement of the machine, the latter being pulled by a self-propelled vehicle or pushed by
15 hand.

In order to prevent an excessive number of balls from being in circulation, the picking up action has to be performed regularly, which involves a considerable labor cost and a regular disturbance for golf players.

Hence, there exists an actual need for a system
20 that picks up balls in a fully automatic manner, and that can operate without interrupting the players and

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with no risk of accidents due to strong drives.

This invention provides a fully automatic system for picking up and returning balls, which needs no labor and allows the players to keep on practicing while balls are picked up.

In a more general manner, the invention provides a system for picking up objects on a delimited surface, consisting of an automatic mobile machine equipped with a motor and a power source, e.g. a rechargeable battery, and provided with an onboard computer. The machine carries a mechanical device for gripping and storing objects in a container, a device for emptying said container, a device for detecting the limits of the surface for picking up. The system further comprises at least one station for recharging the rechargeable batteries and one station for unloading the picked up objects.

According to an aspect of the invention, the system includes a self-contained mobile machine which circulates in a random or pseudo-random manner, over the ball pick-up surface.

In a well-known manner, the surface is preferably delimited by a peripheral wire wherein a low frequency signal circulates to be detected by the machine. Other systems for delimiting the operating surface may be used, including physical obstacles, such as those described in patent application no. PCT/BE91/00068, which discloses a robotic lawn mower.

The pick up machine includes a chassis and driving and guiding members which are known per se, e.g. like those described in patent applications PCT/BE91/00068

and PCT/BE98/00038.

5 The mowing system disclosed in the above documents
is replaced by a system for picking up balls. The
system for picking up balls consists, for instance, of
a roller formed by a set of parallel flexible disks,
which have a suitable profile and are spaced at a
distance which is equal or slightly lower than a ball
diameter. As the machine advances, the flexible disk
system which rests on the ground is passively driven
10 into rotation and rolls over the balls it finds in its
way. The roller wedges the latter between two adjacent
flexible disks which, by the ascending circular
movement and the effect of deviation members in the
descending path, bring them back into a collecting
15 basket supported by the machine. The flexible disk
system is preferably fitted on one or more joints, or
is anyway flexibly mounted, which allows it to stay in
contact with the ground in case of irregularities. The
collecting basket has an opening on its bottom side,
20 which is controlled by the onboard computer.

In accordance with one embodiment, the flexible
disk system comprises an articulated shaft which is
adapted to be lifted, e.g. by means of a screw jack.
In case of a change of direction the computer forces
25 the flexible disk system to be lifted up to avoid a
considerable friction with the ground, as well as the
degradations of the grass surface and the additional
power consumption that may result therefrom.

When the basket is full or the batteries of the
30 machine have to be recharged, the computer for
controlling the forward movement of the machine

triggers an algorithm which allows to return it toward a fixed location (station). The ball filling limit in the collecting basket may be detected, for instance by an IR transceiver system connected to the microcomputer.

According to one embodiment, the machine returns to the recharging station by looking for the peripheral wire, i.e. by running, for instance, a straight path in a random manner and after detecting it, by following it at a fixed distance until reaching the terminal or recharging station. The latter may advantageously be connected to and integrated with a ball recovery station.

In fact, according to a preferred embodiment, once the terminal has been detected, e.g. by contact, the machine stops and possibly finds a more accurate position. The computer controls the door opening, allowing the basket to be emptied and maintains the machine in a recharging state until batteries are full. After recharging, the machine starts again for a new pick up cycle, and covers the surface of the practice green in a random or quasi-random manner.

In accordance with other embodiments, currently less preferred, the machine can reach the recharging station by other means, e.g. by analyzing a magnetic field with a possible induction recharge (see for instance US 5,869,910) by radio control or by infrared signal detection.

In the latter case, the machine of the invention incorporates a system which allows it to be controlled and positioned relative to a fixed station which

operates by means of a directional infrared beam, transmitted by the fixed station, the mobile robot being provided with a directional infrared transmission detection system (i.e. detectors) which is connected to the microcomputer incorporated in the robot, said robot being displaced over an operating surface in a substantially random manner, and said microcomputer comprising an algorithm for controlling the return to the fixed station by displacing the robot toward the direction of transmission of said infrared beam. The infrared beam may be a narrow directional beam and the detection system may be advantageously situated on the chassis at the center of rotation of the robot, turned toward the moving direction of the robot, the accurate positioning in the fixed station being obtained by rotating the machine about a vertical axis according to an algorithm based on the detection of the narrow beam, e.g. through 2 to 12°.

This system may operate with at least two beams having substantially different directions, transmitted from or near the fixed station, the less directional beam/s being used to get closer to the fixed station, while the more directional beam/s are used for the final accurate robot positioning step, relative to said fixed station.

The machine of the invention may operate while balls are being driven. The machine has a lower profile, of little significance as compared with classic pulled or towing machines, and the collision with a ball is thereby reduced. Moreover, the shell of the machine, e.g. made of plastic, possibly covered

with foam, is conceived in such a manner as to be able to support the impact of golf balls without being damaged thereby.

5 At certain times, it might be desirable that the surface be totally clear of balls, e.g. to mow the lawn in a conventional manner. In this case, the recovery on a random or quasi-random path system is no longer desirable. A systematic path system may be used here to cover the whole surface in an optimized time.

10 For example, the machine may follow the peripheral wire at a certain distance from the latter. Thanks to a constant measurement of the domain of a peripheral wire for delimiting the working surface such as the one described in patents EP 0550 472 B1 and 0 744 093 B1,
15 the machine constantly determines its distance from the wire and may increase the latter after each run. Balls will be recovered in parallel bands from the periphery inwards.

20 More precisely, according to the latter method, at first the machine is positioned along the peripheral wire. Once the machine is started, the onboard computer periodically measures, in a well-known manner, the width of the signal transmitted by the peripheral wire. This measurement allows the onboard computer to
25 determine its distance from the wire and to control the direction of the machine in order to maintain a fixed distance from the wire.

30 If the length of the wire has been first entered into the memory of the onboard computer, the latter may determine with a reasonable accuracy the moment in which a turn has been completed by the mower along the

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wire. Then, the mower can move away from the wire to a distance equal to the cutting width in such a manner as to be able to perform a new loop at a distance from the wire which is increased by the cutting width. Hence, the operation may be repeated by increasing every time the distance between the mower and the peripheral wire, ideally until reaching the center of the area to be mowed.

According to a variant embodiment, the length of the above wire shall not be necessarily entered into the computer. In fact, said length may be determined by the onboard computer by integrating the speed differences between the driving wheels of the machine (changes of direction) until the total change reaches or exceeds 360°. To this end, the system may also advantageously integrate a magnetic or inertial compass.

The invention will be further described with reference to the following embodiment, and referring to the drawings annexed by way of non-limiting examples.

Fig. 1 is a bottom view of the machine of the invention.

Fig. 2 is a side sectional view of the machine as shown in Fig. 1.

Fig. 3 shows the path followed by the machine.

Fig. 4 shows an example of electric recharging and golf ball unloading station.

Fig. 5 shows a recharging system in detail.

Fig. 1 is a bottom view of the machine of the invention. It shows the flexible disks 1, the balls which are wedged between the disks, the transverse disk

rotation shaft 3, which is preferably linked to the chassis in a non rigid manner, the case comprising the control electronics and the onboard computer 4, the batteries 5, the motors for the wheels 6, the idle
 5 rollers 7 mounted at the front part, the peripheral wire detector 8, the optical basket fill detector 30, 31, consisting of an infrared transmitter and receiver.

Fig. 2 is a sectional side view of the machine of Fig. 1. The ball receiving basket 9 is visible herein,
 10 provided at its bottom wall with an opening door which pivots about the axis 11 and whose opening is controlled by the screw jack 12. The fingers 13 situated on the circular path of the wedged balls extract the balls out of the disks to let them fall
 15 into the basket 9.

Fig. 3 shows an example of the machine path. This path is typically of the random type. When the machine is filled up with balls, and/or when the battery is sufficiently empty, the machine looks for the
 20 peripheral wire 15 and follows it until it detects the station 17.

Fig. 4 shows one embodiment wherein the station is raised so that a container 18 designed to collect the balls may be introduced thereunder. The ramps 19 allow
 25 the machine to reach the platform 20 in which the recharging station is situated. The platform 20 is fitted with a grid 21 through which the balls released from the basket opening 9 may reach the container or the ball return duct.

30 Fig. 5 shows the machine connected to the recharging station. While following the peripheral

wire, and at the station, two brushes 23 at the sides of the machine come in contact with two guiding rails 24 mounted on each flank of the machine. By providing rails on the two flanks allows the machine to reach the station from either direction. The brushes 23 are mounted on the station via the arm 25 fitted to the case in a flexible manner in 26, which allows the arm to pivot when the machine contacts it. The onboard computer constantly checks the tension on the brushes 23. Whenever a tension is detected, the presence of rails, hence of the station, is acknowledged, and this allows the computer to stop the machine.

The ball unloading system may be advantageously connected to an automatic ball return system in the immediate proximity of the players. This system may include slightly inclined ducts, which convey the balls by gravity. As mentioned above, a recharging station which is situated appreciably higher than the ball driving site, and accessible through ramps, will be particularly suitable to this end.

Nevertheless, a receiving tub at ground level or a bowl in the ground may be provided, the tub or the bowl being equipped with a ball lifting system, e.g. a feed screw, a band conveyor, or the like, to bring balls into the containers or the return ducts.

It shall be also appreciated that the system described herein may be adapted to collect objects other than golf balls. Particularly, by modifying the system, these objects might be rubbish or vegetables.

Hence, the mechanical gripping device may consist of a rotary brush provided with spikes, radially

arranged around the shaft of said brush. The spikes are adapted to pierce objects situated on said surface, and said objects are dragged along into a circular movement, released from the spikes by fixed elements
5 which are engaged between the spikes, and deviate the objects toward a storage device. The objects may be dead leaves or pieces of paper.

Also, it shall be understood that the system of the invention may be connected to a mowing system,
10 possibly carried by the same chassis. An automatic mowing device as described in the above PCT applications may be developed separately, while using the same peripheral wire and the same discharging station.

15 It shall be further understood that the robot motor may be associated to a power source other than a rechargeable battery, for instance a fuel cell, or a thermal or hybrid motor.

20 According to another variant, the system of this invention would not include a driving means of its own, but would be towed by a mobile mowing robot whereto it would possibly be linked.

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REVENDICATIONS.

1. A system for picking up objects over a delimited surface, which consists of an automatic mobile machine provided with an onboard computer, at least one motor associated with a power source, a mechanical device for gripping and storing objects in a container supported by the mobile machine, a device for emptying said container, a device for limiting the pick up surface and a station in which the picked up objects may be unloaded.

2. A system as claimed in claim 1, characterized in that the power source is a rechargeable battery and that there is provided at least one station for recharging rechargeable batteries.

3. A system as claimed in claim 1 or 2, wherein the objects are golf balls.

4. A system as claimed in any preceding claim, wherein the battery recharging and the ball unloading stations are coupled.

5. A system as claimed in any preceding claim, wherein the surface limiting device consists of a wire extending at the periphery of said surface and being detectable by a detector carried by the machine.

6. A system as claimed in the preceding claim, wherein the machine reaches the station/s by following the surface limiting wire, the station/s being situated along said wire or on an extension thereof.

7. A system as claimed in the preceding claim, characterized in that the recharging station consists of at least one fixed rail which is situated along said

wire and is adapted to come in contact with one of two side brushes carried by the mobile machine.

5 8. A system as claimed in any preceding claim, characterized in that the recharging stations are situated in the proximity of players.

10 9. A system as claimed in any preceding claim, wherein the station/s comprise a ball recovery bowl, equipped with a ball lifting system, and connected to the driving site by means of a duct which is adapted to convey balls in the immediate proximity of the players at least partly by gravity.

15 10. A system as claimed in any preceding claim, wherein the automatic machine proceeds over the pick up surface at least partly in a random manner.

20 11. A system as claimed in claim 1, wherein the mechanical gripping system consists of a rotary brush having spikes, arranged radially around the shaft of said brush, said spikes being adapted to pierce the objects situated on said surface, and said objects being dragged along into a circular movement, released from the spikes by fixed elements which are engaged between the spikes, and deviate the objects toward a storage device.

25 12. A system as claimed in the preceding claim, wherein the picked up objects are dead leaves.

13. A system as claimed in claim 9, wherein the picked up objects are paper sheets.

14. An automatic pick up machine adapted to the system as claimed in any preceding claim.

30 15. A machine as claimed in the preceding claim, characterized in that it includes deflector arms which

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17. A method of picking up objects over a predetermined surface, by using a system or a machine as claimed in claims 1 through 16.

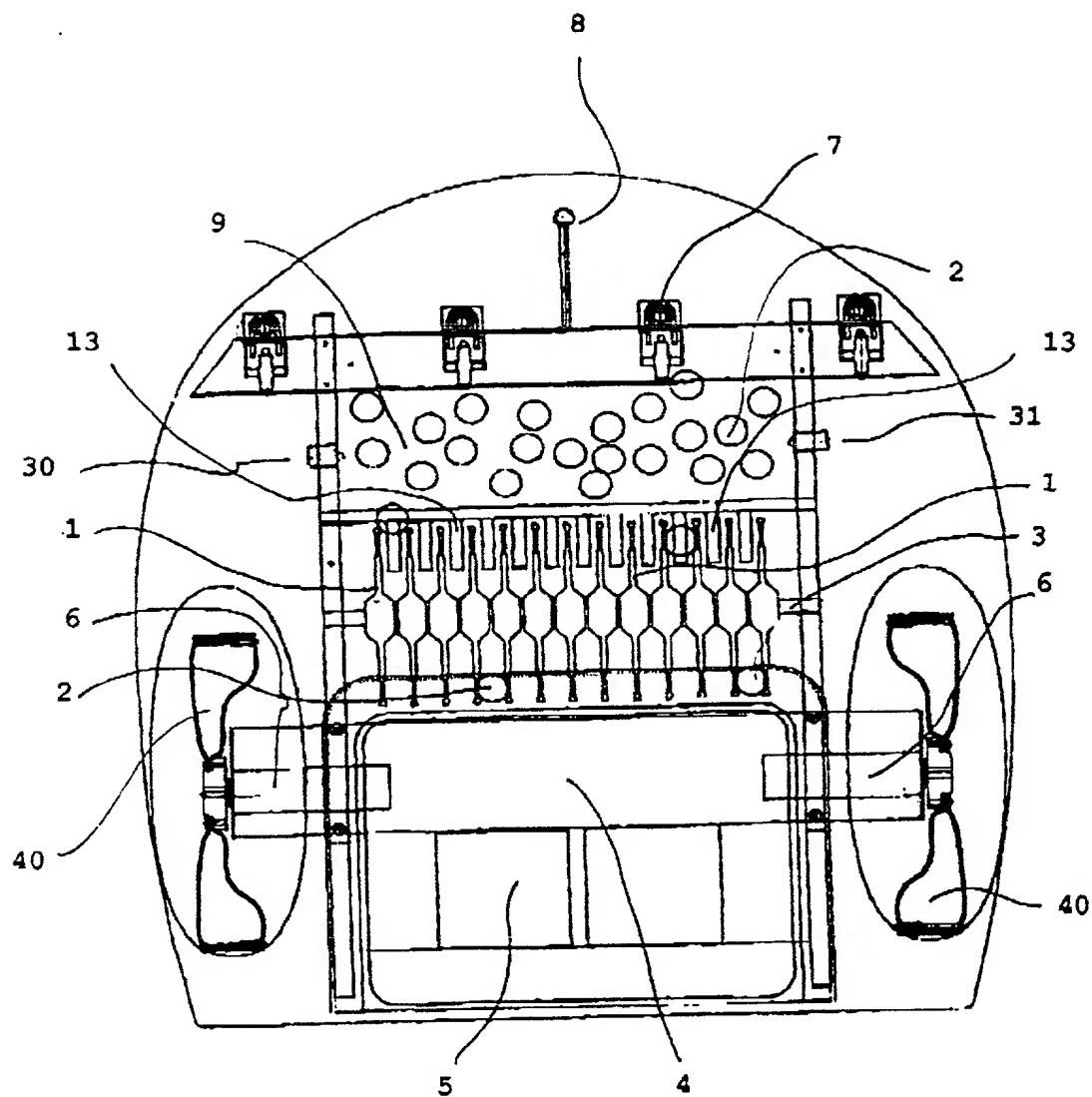


FIG. 1

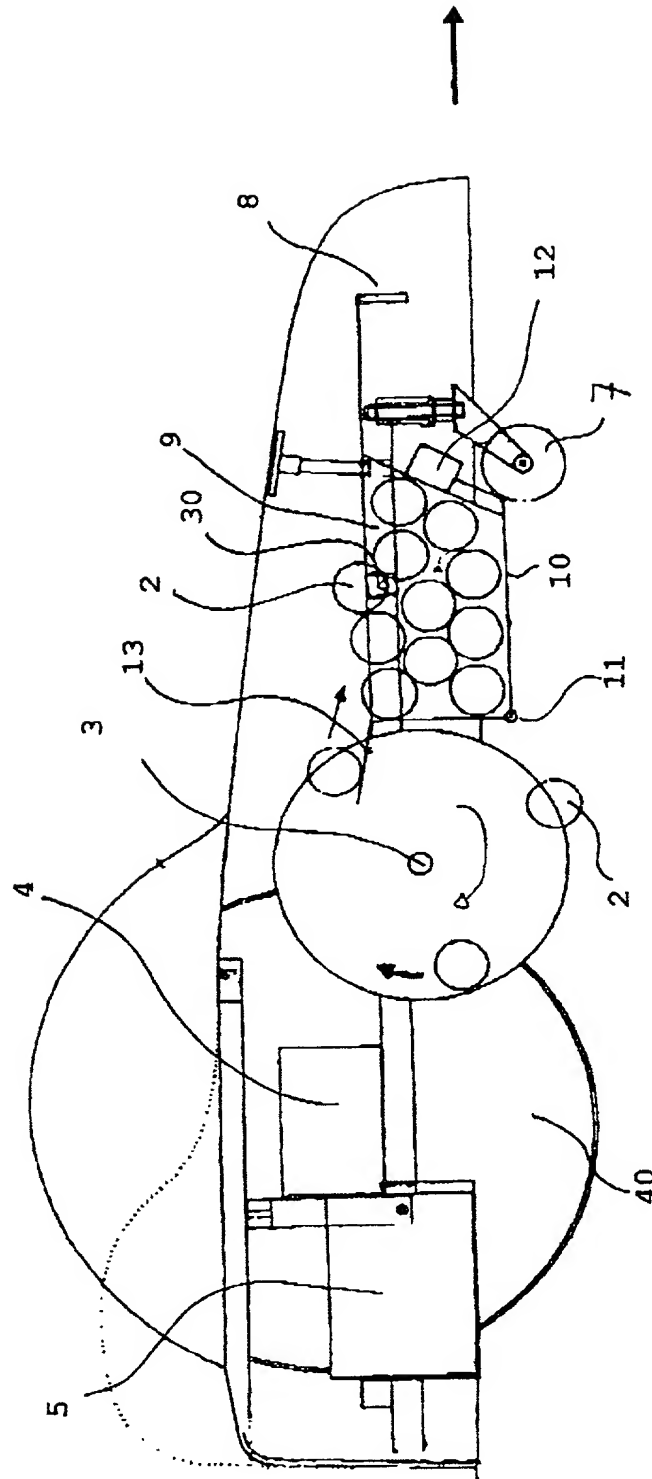


FIG. 2

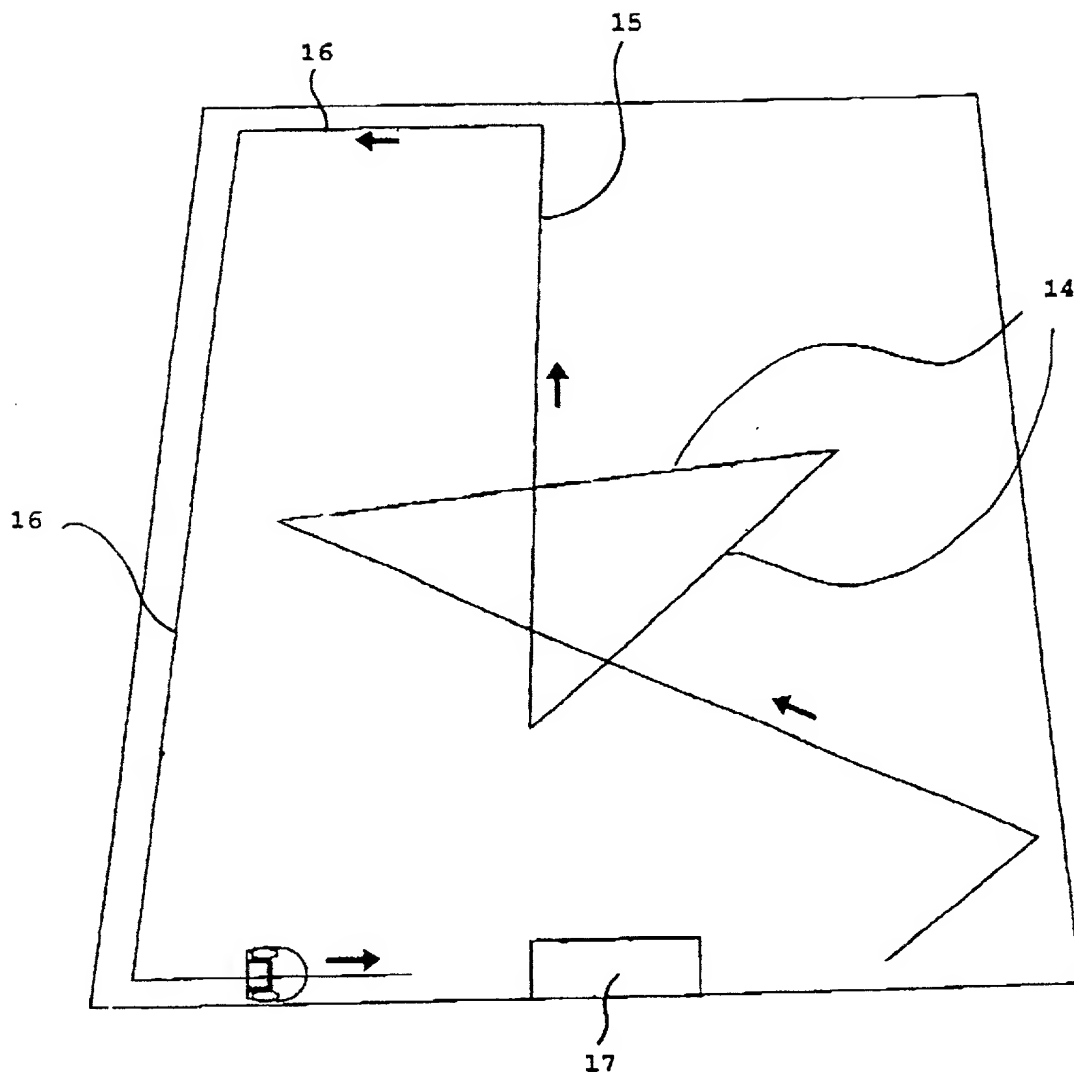


FIG. 3

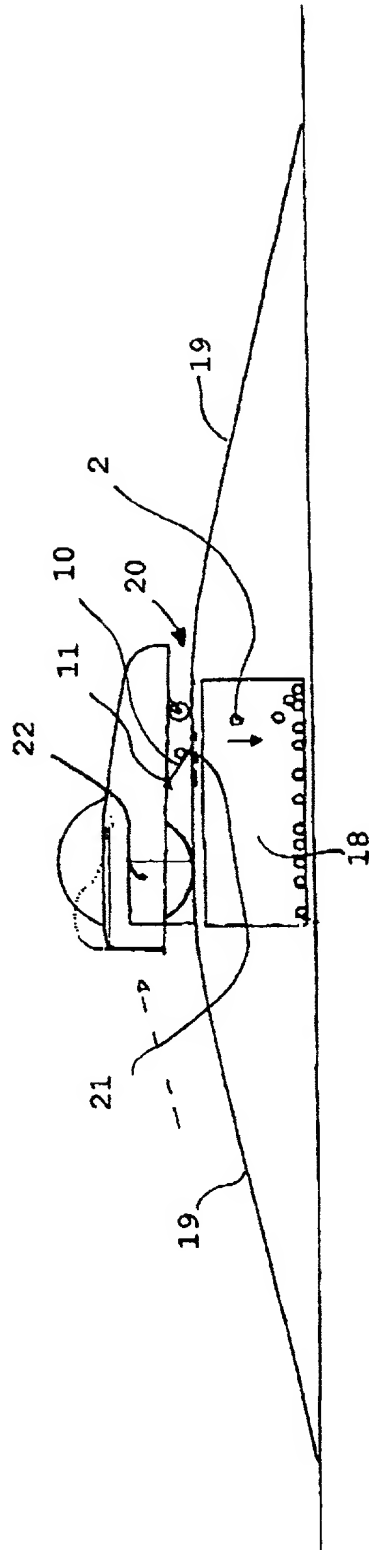


FIG. 4

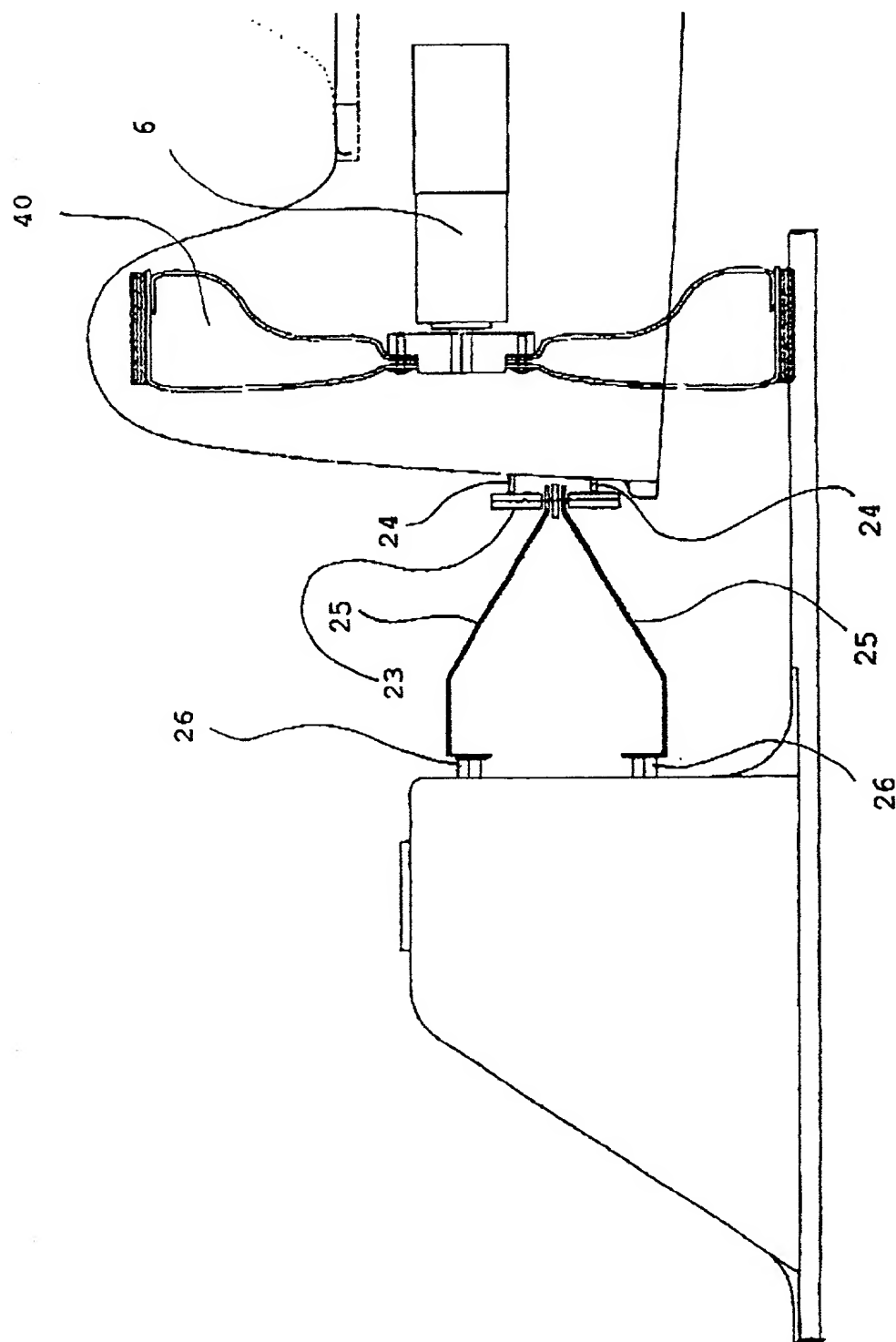


FIG. 5

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PTO/SB/01 (10-00)

Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

**DECLARATION FOR UTILITY OR
DESIGN
PATENT APPLICATION
(37 CFR 1.63)**

☐ Declaration Submitted with Initial Filing OR ☐ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.18 (e)) required)

Attorney Docket Number 21413-PCT-PA

First Named Inventor Colens

COMPLETE IF KNOWN

Application Number

Filing Date

Group Art Unit

Examiner Name

As a below named inventor, I hereby declare that:

My residence, mailing address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Device for automatically picking up objects

(Title of the invention)

the specification of which

☐ is attached hereto

OR

☒ was filed on (MM/DD/YYYY)

06/16/00

as United States Application Number or PCT International

Application Number PCT/BE00/00064

and was amended on (MM/DD/YYYY)

(if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
9900422	Belgium	06/17/99	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	<input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

[Page 1 of 2]

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POWER OF ATTORNEY OR AUTHORIZATION OF AGENT

Application Number	
Filing Date	
First Named Inventor	
Group Art Unit	
Examiner Name	
Agency DocuNet Number	21413-PCT-PA

I hereby appoint:

☐ Practitioners at Customer Number

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☒ Practitioner(s) named below:

Name	Registration Number
Leonard Bloom	18,369
Robert M. Gamson	32,986
Sam Rosen	37,991
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<input checked="" type="checkbox"/> Firm or Individual Name	LEONARD BLOOM & ASSOCIATES, LLC				
Address	Intellectual Property Law Offices				
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Country	U.S.A.				
Telephone	410-337-2295	Fax	410-337-2296		

I am the:

☒ Applicant/Inventor.

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

SIGNATURE of Applicant or Assignee of Record

Name: Andre Colens

Signature: [Signature]

Date: 28 November 2001

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

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NAME OF SOLE OR FIRST INVENTOR:

☐ A petition has been filed for this unsigned inventor

Given Name

André

Family Name

COLENS

(first and middle (if any))

Inventor's
Signature

28 November 200

Date

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NAME OF SECOND INVENTOR:

☐ A petition has been filed for this unsigned inventor

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(first and middle (if any))

Family Name

or Surname

Inventor's
Signature

Date

Residence City

State

Country

Citizenship

Mailing Address

Mailing Address

City

State

Zip

Country

☐ Additional inventors are being named on the _____ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto.